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| 09/722,367      | 11/28/2000  | Robert A. Drebin     | 723-968             | 5954             |

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EXAMINER

NGUYEN, KIMBINH T

ART UNIT PAPER NUMBER

2671

DATE MAILED: 03/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/722,367

Applicant(s)

DREBIN ET AL.

Examiner

Kimbinh T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24, 26-45 and 47 is/are rejected.
- 7) ☒ Claim(s) 25, 46 and 48 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5,6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. Claims 1-48 are pending in the application.

#### ***Specification***

#### ***Abstract***

2. The abstract should be limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited.

#### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 15, 16, 17 and 19 rejected under 35 U.S.C. 112, second paragraph, as being indefinite, because claim 10 does not include steps (b) and (c), claim 14 does not include step (d).

For the purpose of this Office Action, claims 15-17 depend upon claim 14 and claim 19 depends upon claim 18.

#### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 14-16, 18-24, 26, 28, 30, 31, 33, 35, 36, 39, 40, 42-45 and 47 rejected under 35 U.S.C. 102(e) as being anticipated by Gossett et al. (6,236,413).

Claims 14-16, Gossett clearly anticipated a multi-texturing; a) passing texture mapping data through a component combining to provide combined textured outputs; b) reconfiguring the components 201-205 combining (col. 7, lines 51-53) (Gossett teaches using multi-pass via the recirculation pipe to reconfigure the appropriate components: texture address unit 201, texture filter unit 202, texture environment unit 203, per-pixel lighting unit 204 and light environment unit 205 to execute the particular operation such as filter, blending, shading; c) passing the combined textured component outputs through the reconfigure to provide combined multi-textured outputs (the outputs of multi-texture filter operations are combined in the texture environment unit 202) (col. 10, lines 46-63) .

Claims 18-20, Gossett et al. discloses a) generating first texture mapping data; b) generating second texture mapping data; d) passing the second texture map and the first output through the combiner hardware to provide a second output corresponding to the first and second texture map; step b) is performed during a blending, step d) is

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performed during a further blending is later than the first blending the combiner hardware provides more than ten (filter4 mode that is applied to sixteen sample values in a multi-pass operation to provide at least sixteen successive passes of blending) (col. 10, lines 31-37; figs. 10-15).

Claims 21-24, Gossett et al. clearly anticipated a pipeline includes texture map unit (texture filter unit 202) and a texture environment (texture environment unit 203) including combiner circuits (col. 8, lines 48-56), an improvement comprising iteratively reusing the combiner circuits (components 201-205) to provide multiple stages that apply multiple textures to a surface displayed within an image (col. 7, lines 48-53); the iteratively reusing includes using the combiner circuits to combine first texel colors during a first stage (or first pass), using the same combiner circuits to combine second texel colors using a second blending stage (second pass) different from the first stage (completely independent of other operation, col. 10, lines 16-17), both first and second stages are consecutive (col. 2, lines 4-7) falling within a period for generating a single image frame; the combiner circuits comprise independent color combiner circuits (col. 10, lines 51-63).

Claim 26, Gossett et al. discloses a color/alpha component blending unit (texture filter unit) configured within the pipeline to combine texture, rasterized color and/or alpha component data to produce a computed color (col. 9, lines 3-4) and a feedback (recirculation pipe) that enables reintroduction of the computed color into the pipeline, wherein multiple textures is achieved by an iterative use/reuse of the blending unit (col. 7, lines 48-50).

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Claims 28, 33, 35, 39, 42, Gossett et al. discloses a texture environment unit (col. 8, lines 45-56) configured within the pipeline to process input texture, color and/or alpha, the texture environment having a feedback mechanism (recirculation pipe) operable during selected temporal processing stages.

Claims 30, 36, 40, Gossett et al. discloses the texture environment unit may accommodate up to sixteen (8 samples take 2 passes) successive temporal processing stages (col. 10, lines 31-37).

Claim 31, Gossett et al. discloses the feedback mechanism comprises storage registers (caches) (col. 3, lines 11-16).

Claim 43, Gossett discloses blending operation (col. 8, line 18) and recirculating (col. 3, line 14).

Claim 44, Gossett et al. discloses a multitexture for performing blending/shading and recirculating (col. 10, lines 47-63).

Claims 45 and 47, Gossett et al. discloses recirculating pipeline 211 to provide an output that is fed back for use in blending operation (col. 3, lines 11-16).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claims 1, 2, 5, 6, 10, 12 and 13 rejected under 35 U.S.C. 103(a) as being unpatentable over Gossett et al. (6,236,413).

Claim 1, Gossett et al. discloses in a graphics pipeline (col. 5, line 54), a hardware shader (texture-shader subsystem 133, col. 5, line 56) that blends inputs to provide color output that is fed back (col. 3, lines 11-13) for use as an input for blending operation (col. 8, lines 1-18). The difference between the Gossett's reference and the claim invention is Gossett does not teach using blending to provide opacity; however, Gossett teaches performing blending, texturing and anti-aliasing by using texture-shader subsystem which also related to lighting and color or opacity; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the Gossett's teaching for performing blending to provide color and/or opacity, because utilizing texture-shader subsystem of the multi-pass operations, it would implement advanced shading functionality, the graphics pipeline is streamlined and is able to run at very high clock speeds, (see abstract; col. 7, lines 46-48).

Claim 2, Gossett et al. discloses an output of the shader can be recirculated to provide a blending stages (col. 8, lines 1-18).

Claim 5, Gossett et al. discloses the pipeline includes a recirculating texture unit coupled to the shader, the recirculating unit performs a texture mapping (fig. 2, col. 7, line 62 through col. 8, lines 27).

Claim 6, Gossett et al. discloses the shader includes a programmable clamped (the light colors is clamped) (col. 9, lines 15-21, lines 45-47).

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Claim 10, Gossett et al. discloses an output of the shader is made available as an input for blending operations (col. 8, lines 7-14).

Claim 12, Gossett et al. discloses the shader includes a feedback (col. 3, lines 7-16).

Claim 13, Gossett et al. discloses the feedback includes buffers (frame buffer 109, z buffer 110) for retaining an output for blending and at least one of the buffers has an output connected to an input of the shader (col. 6, lines 3-14).

9. Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Gossett et al. (6,236,413) in view of Cook (ACM, Computer Graphics, Volume 18, Number 3, July 1984), pages 223-232.

Claim 3, Cook discloses recirculation of the shader output (an intermediate step) allows shade tree type combining operations (section 3. Shade trees, page 224). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Cook's teaching into Gossett's method for utilizing shade tree type into shading operation, because this is particularly useful in rendering a surface that consists of different materials (page 224).

10. Claims 4, 11, 17, 27, 29, 32, 34, 37, 38 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gossett et al. (6,236,413) in view of Van Hook et al. (6,331,856).

Claim 4, Van Hook et al. discloses the shader (blending hardware) provides both color and alpha blend (figs. 29 and 31). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Van Hook's



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teaching into the Gossett's method for blending color and alpha, because the mode blender can perform different conditional color blending and z buffer updating, and therefore can handle all other various types of surface (opaque surfaces, transparent surfaces) (col. 54, lines 39-43).

Claim 11, Van Hook et al. discloses the shader includes separate blending circuits for color blend and alpha blend operations (figs. 27 and 28). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Van Hook's teaching into Gossett's method for utilizing blending operation, because the mode blender can perform different conditional color blending and z buffer updating, and therefore can handle all other various types of surface (opaque surfaces, transparent surfaces) (col. 54, lines 39-43).

Claim 17, Van Hook et al. discloses the component combining includes an alpha combiner (col. 53, line 58; fig. 28). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Van Hook's teaching into Gossett's method for utilizing alpha combiner into blending, because alpha combiner could be used to represent the ambient color of the environment (col. 53, lines 65-67).

Claims 27, 32, 37, 38, Van Hook et al. discloses the blending unit comprises multiplier and adder to accept up to four input arguments (col. 18, lines 62-67; fig. 7, #423). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Van Hook's teaching into Gossett's method for utilizing multiplier and adder for blending, because it would make the signal processor especially suited for calculations, texture resampling and filtering (col. 17, lines 60-63).

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Claim 29, Van Hook et al. discloses the blending unit is connected to storage register for making an output as an input (figs. 7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Van Hook's teaching into Gossett's method for utilizing registers, because it would provide register instruction format to access data bit within data memory (col. 18, lines 27-32).

Claims 34, 41, Van Hook et al. discloses the input texture and rasterized color data comprises RGB and alpha data (figs. 18 and 19). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the

11. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gossett et al. (6,236,413) in view of Myhrvold et al. (5,867,166).

Claims 7-9, Myhrvold et al. discloses a programmable scaler (col. 72, lines 50-65; col. 74, lines 40-41); the shader includes a comparator and color swap (col. 71, lines 10-13). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Myhrvold's teaching into Gossett's method for utilizing scaler, comparator and color swap, because it would provide a hardware implementation of the sort logic for blending operation (col. 71, line 10).

#### ***Allowable Subject Matter***

12. Claims 25, 46 and 48 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not disclose the combiner circuits computed by:

$(D + (-1)_{\text{sub}} * ((1-c) * A + C * B) + \text{bias}) \ll \text{shift}$ ; the single texture address coordinate/data processing unit interleaves the processing of logical direct and indirect texture coordinate data.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Kimbinh Nguyen** whose telephone number is **(703) 305-9683**. The examiner can normally be reached **(Monday- Thursday from 7:00 AM to 4:30 PM and alternate Fridays from 7:00 AM to 3:30 PM)**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman, can be reached at (703) 305-9798.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**Or faxed to:**

**(703) 872-9314 (for Technology Center 2600 only)**

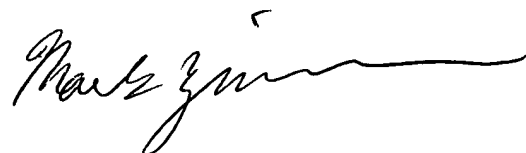
Hand-delivered responses should be brought to Crystal Part II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Kimbinh Nguyen

February 12, 2003

A handwritten signature in black ink, appearing to read "Mark Zimmerman", with a long horizontal flourish extending to the right.

MARK ZIMMERMAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600